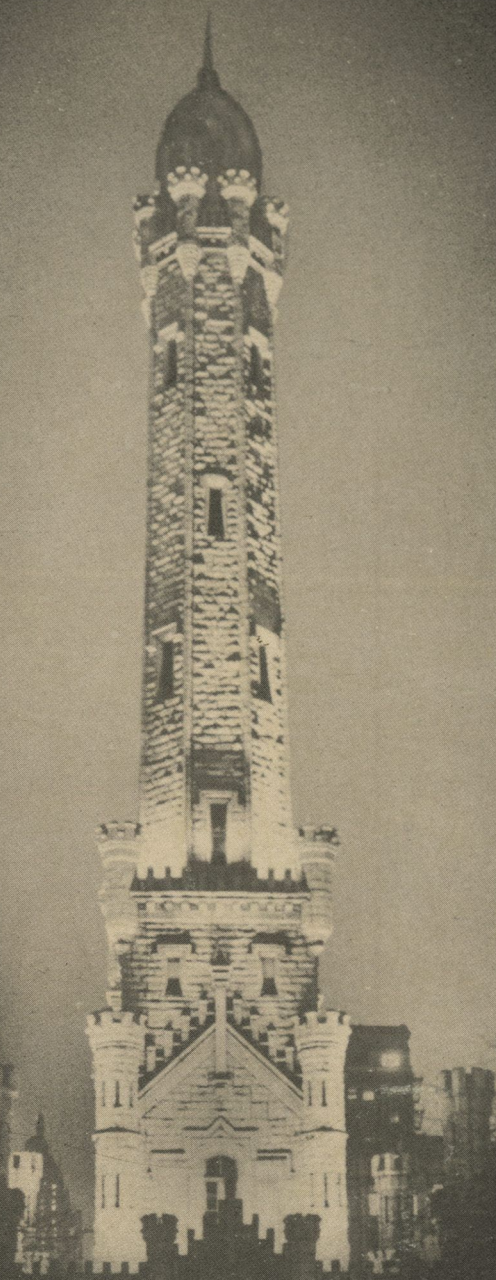


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STATE WATER SURVEY AND
LIBRARY OF

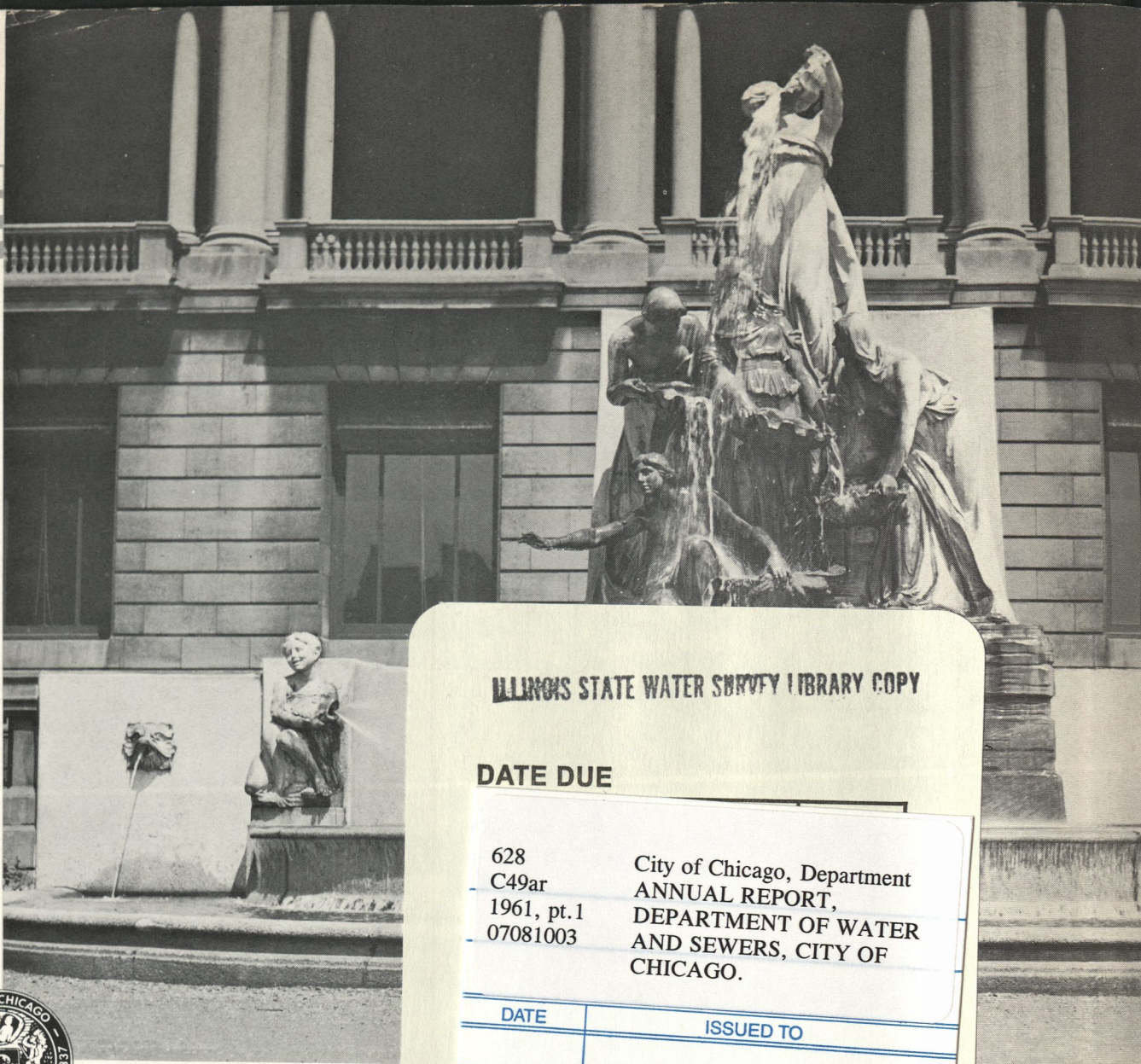


**DEPARTMENT
OF WATER
AND SEWERS**

**ANNUAL
1961
REPORT**

CITY OF CHICAGO - RICHARD J. DALEY, Mayor

SPIRIT OF THE
 GREAT LAKES
 fountain
 on Michigan
 Avenue at the
 south facade of
 Chicago's Art
 Institute.
 The photographs
 of fountains
 in this book are
 through the
 courtesy of the
 Chicago Park
 District.



THE CHICAGO C

RICHARD J.
 Mayor

DORSEY R. C.
 President Pro

JOHN C. MARCIN
 City Clerk

Ward

1. John D'Arco
2. William H. Harvey
3. Ralph H. Metcalfe
4. Claude W. B. Holman
5. Leon M. Despres
6. Robert H. Miller
7. Nicholas J. Bohling
8. James A. Condon
9. Dominic J. Lupo
10. Emil V. Pacini
11. Stanley J. Nowakowski
12. Arthur V. Zelezinski
13. John E. Egan

Ward

14. Joseph P. Burke
15. Joseph J. Krska
16. Paul M. Sheridan
17. Arthur A. Slight
18. James C. Murray
19. Thomas F. Fitzpatrick
20. Kenneth E. Campbell
21. Charles S. Bonk
22. Otto F. Janousek
23. George J. Tourek
24. Benjamin F. Lewis
25. Vito Marzullo

ALDERMEN

Wa

- 26.
- 27.
- 28.
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- 30.
- 31.
- 32.
- 33.
- 34.
- 35.
- 36.
- 37.

- (a) Resigned August 3, 1961
 (b) Resigned October 31, 1961

Edward J. Padden, Chief Clerk
 Clement J. McDermott, Assistant Sergeant-at-Arms

William F. Harrah, Sergeant-at-Arms
 Michael Coletta, Assistant Sergeant-at-Arms

ILLINOIS STATE WATER SURVEY LIBRARY COPY

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City of Chicago, Department
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 DEPARTMENT OF WATER
 AND SEWERS, CITY OF
 CHICAGO.

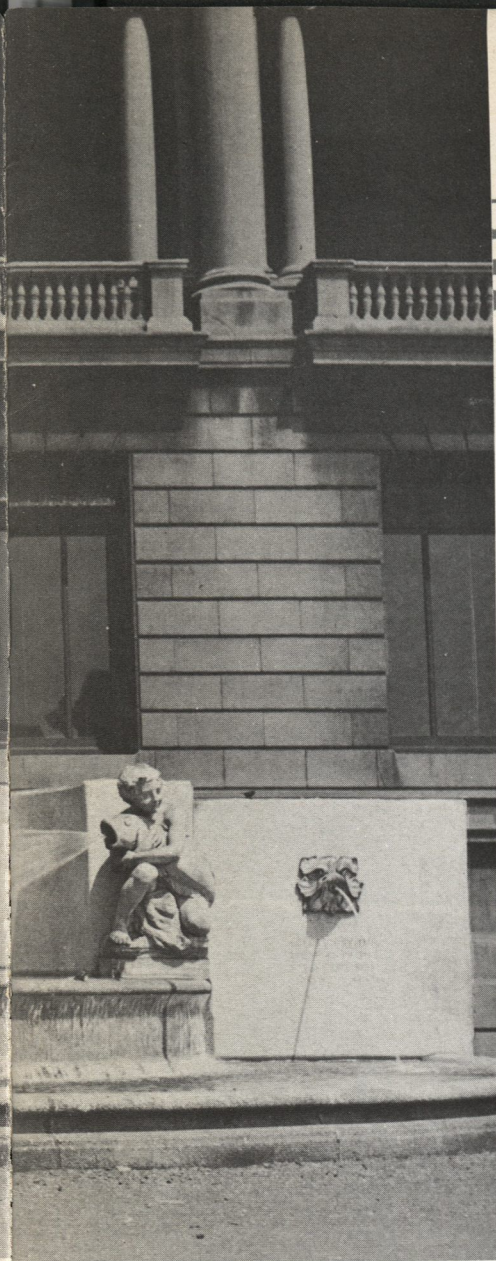
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City of Chicago, Department
 ANNUAL REPORT,
 DEPARTMENT OF WATER
 AND SEWERS, CITY OF
 CHICAGO.

DEMCO



The Honorable Richard J. Daley, Mayor
The Honorable Members of the City Council
City of Chicago, Illinois
Gentlemen:

The year 1961 was one of steady growth for the Chicago water and sewer systems operated by the Department of Water and Sewers. Every effort was made to expand the systems to keep them properly geared to present and, wherever possible, future demands. Both systems operated without interruption and furnished water supply and drainage services to the public at a very satisfactory level all during the year.

This report describes the departmental activities of the employees who were responsible for the services rendered and the gains made during the year. There are two separate technical supplements to this report describing in more detail the operations of each system. These supplements are available upon request to those who may have a use for them.

Briefly, the waterworks system pumped a total of some 372 billion gallons of water during 1961 to industrial and commercial users, and to 4.4 million persons residing in the 388 square mile area of the City of Chicago and the 59 suburbs served by the system. Peak hour pumpage was at the rate of 1,798 million gallons per day at 3:00 p.m. on August 31, and the peak day pumpage for the year occurred on June 30 when the total pumpage was over 1,425 million gallons.

Total water fund revenues in 1961, including income from water charges, permit fees and other miscellaneous sources, amounted to \$49,275,478. The increase in the revenues of the waterworks system during 1961, as compared to 1960, is attributable primarily to the 37½ percent increase in the water rates as authorized by the City Council and put into effect on May 1, 1961. It is pointed out that the meter rate in effect at the year end, 22 cents net per 1,000 gallons, is still among the lowest rates charged by the major cities in the United States. The revenues produced by this water rate will make funds available to cover the costs of a realistic capital improvement expansion program of the waterworks facilities needed to meet anticipated demands.

Approximately 42 miles of water mains and 78 miles of sewers, of various sizes, were constructed and placed in service during the year. Substantial progress was made in the construction of the Central District Filtration Plant, work continued on the expansion of the South District Filtration Plant, and construction of the new Southwest Pumping Station at 84th Street and South Kedvale Avenue and the adjoining Columbus Avenue water tunnel system is nearing completion.

Modernization of the Springfield Avenue and Roseland Pumping Stations was completed during the year, and at the Mayfair Pumping Station two new 80 million gallon per day pumps were installed, bringing the capacity of this station to 400 million gallons per day.

We wish to express publicly our appreciation to every employee for a job well done, as well as to other agencies of government, industrial groups, and to the people of Chicago for the support and cooperation which they have extended to this Department.

And, finally, Mr. Mayor, we wish to thank you and the City Council for your guidance and support—help which has contributed so greatly to the progress made by this Department since its establishment. You may be sure that we will continue to strive to improve these services to the public—services vital to the health, safety, security, prosperity and well-being of the citizens of our great metropolitan community.

Respectfully submitted,
JAMES W. JARDINE
Commissioner



Cover—THE OLD WATER TOWER—virtually the only structure to survive the Fire of 1871. This tower symbolizes the "I WILL" spirit of the City to endure and grow.

1961 — DEPARTMENT OF WATER AND SEWERS — ANNUAL REPORT

WATER TO MAKE A MORE BEAUTIFUL CHICAGO



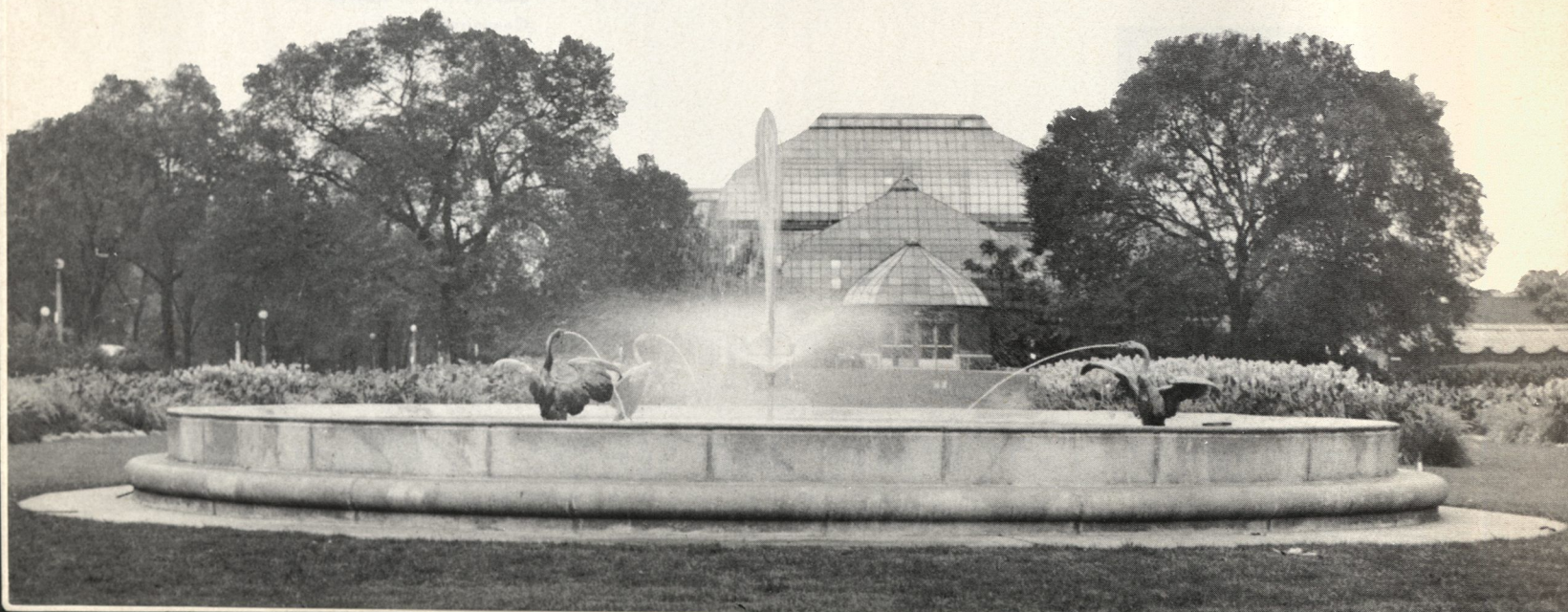
EAGLE FOUNTAIN
at Congress Street Plaza.

Much of the attractiveness and beauty of Chicago depends to a major extent upon its water supply. Several of the photographs in this Annual Report, taken at various park locations, illustrate how water is used in the fountains and statues across the City.

The photograph on the inside front cover is that of "The Fountain of the

Great Lakes" by sculptor Lorado Taft. This fountain may be seen in Grant Park, just south of the Chicago Art Institute.

Pictured on the opposite page is the "Fountain of Time," one of the great works of sculpture illustrating the life of man from birth to death. This work of art, which is offset by a reflecting pool, was also designed by Lorado Taft and placed on the Midway in the University of Chicago area in 1922. It is considered one of the most elaborate and imaginative works of purely ideal sculpture ever executed in this country and one of the great art treasures of the world.





FOUNTAIN OF TIME in Washington Park at the Midway Plaisance.



Buckingham Memorial Fountain, pictured on the back cover and known as "The Centerpiece of Grant Park," is the largest fountain of its type in the world. Built in 1927 at a cost of nearly \$1 million, its 133 separate jets can spray up to 14,000 gallons of water each minute. The dimensions of this superb fountain are more than twice

as large as the Fountain of Latoria in the Garden of Versailles. Set in a garden 600 feet square, Buckingham is surrounded by smaller ornamental pools. Its column of water in full play rises to a height of 135 feet. At night, the display is made spectacular by colored lights having a combined total of 45 million candle power.

STORKS AT PLAY
fountain in Lincoln Park.

At the end of its first decade of operations, the Department of Water and Sewers will have brought about the following improvements in total installed capacity of major pumping stations:

Station and Location	1953 Capacity	1962 Capacity
Chicago, 811 N. Michigan	210	260
Central Park, 1015 S. Central Park	340	360
Cermak, 735 W. Harrison	300	300
Jefferson, 2250 Eastwood	160	160
Lake View, 742 Montrose	100	100
Mayfair, 4850 Wilson	205	400
Roseland, 351 W. 104th St.	175	305
68th Street, 6801 S. Oglesby	240	290
Springfield, 1747 N. Springfield	340	360
New Southwest, 84th & S. Kedvale	—	175
Western, 4925 S. Western	300	320
*14th Street, 14th St. & Indiana Ave.	100	—
**22nd Street, 2260 S. Ashland Ave.	90	—
	2560	3030

*14th Street taken out of service December 31, 1954.

**22nd Street taken out of service December 31, 1959.

CHICAGO WATER SYSTEM INCREASES PUMPING CAPACITIES

A nine-year \$28 million capital improvement program has quietly revolutionized the capacity of Chicago's pumping stations to furnish an abundant and reliable supply of water to the public. When the Department of Water and Sewers was organized in 1953, the City's twelve pumping stations, two of them virtually obsolete, had a combined installed pumping capacity of 2560 million gallons per day. In four of these stations—Mayfair, Chicago Avenue, Lake View and 14th Street—antiquated vertical triple expansion pumps, throwbacks to the turn of the century, were still in operation.

Peak summer demand periods taxed the ability of these stations, many long in need of far-reaching improvements, to furnish the water supply needed to meet the hot weather demands. Moreover, new patterns of water usage—notably air conditioning and automatic appliances—had been consistently hiking maximum hour and maximum day pumping rates even though the average daily pumpage figures reflected no overall change in demand.

Behind the growing difficulties of the utility's pumping stations loomed two periods of war-time scarcity when, from 1941-45, during World War II, and again in 1950-53, during the Korean War, industry was required to supply essential military

machines. Also, waterworks planners lacked the rudimentary funds to launch vital improvement programs, hindered until 1951 by a low water rate of eight cents per thousand gallons. In 1951, when this rate was increased to twelve cents per 1,000 gallons, and increases of four cents in 1957 and six cents in 1961 were approved, the way was paved for a realistic and comprehensive improvement program to increase the capacities of the water utility to meet the most pressing needs.

Thus, in the 1953-61 period 14 new boilers and 18 new pumps were installed to replace obsolete equipment. The last vertical-type pumps were removed from Chicago and Mayfair stations, the 14th Street and 22nd Street stations were removed from service, and new stacks, ventilation, electrical, elevator, and discharge systems were installed in many of the stations. Not only did installed capacities total 2855 million gallons per day, but the pumps in operation were newer, more dependable, efficient and effective.

Major accomplishments for 1961, notably the installation of two 80 million gallon per day pumping units in the Mayfair station, figure prominently in the increase of the overall installed capacity of the system. And, during the year, work advanced on the Southwest pumping station, un-

der construction at 84th St. and S. Kedvale Ave. This four-pump plant will add 175 million gallons per day capacity to the system, bringing the total pumping capacity in 1962 to over 3000 million gallons per day. When the new station is placed in service, the water works will have 55 pumps available for use, having a reserve capacity of about 200 per cent over average daily needs.

Other accomplishments during the year include the completion of modernization work at Roseland and Springfield stations, the capacities of which were increased from 175 million gallons per day to 305 million per day, and from 340 million gallons per day to 360 million, respectively, during the 1953-61 program. Moreover, water-works engineers considered possible programs for the replacement of the Lake View pumping station, scheduled for deactivation during the 1962-65 period.

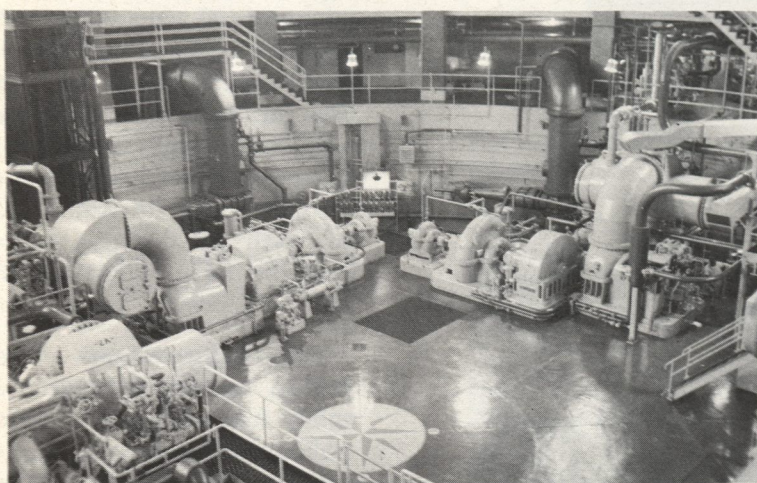
During the year, the City's ten pumping stations furnished an uninterrupted supply of water to all parts of the City and 59 suburban communities in a supply area comprising 388 square miles. These stations pumped a total of more than 372 billion gallons of water. Of this total, 1425 million gallons were pumped on June 30, the peak day. At the peak hour which came on August 31, at 3:00 p.m., the rate of demand was 1798 million gallons per day.



Western Avenue



Southwest



Pump installation—Roseland

A description of each station follows:

Southwest — A 175 million gallon per day rated capacity modern electric plant is designed to serve the Southwesterly portion of Chicago and 11 nearby suburbs. The station will utilize a vertical submerged-type turbine pump which will eliminate the need for installation of deep pump pits. The plant, 151 feet long and 120 feet wide, will have three 50 million gallon per day pumps and one 25 million gallon per day pump, as well as space for the eventual installation of two additional 50 million gallon per day units when these are warranted by demand. It will serve about a 19 square mile area inside the City lying westerly of a line running

roughly from Cicero Ave. and 39th St. to 87th St. and Damen Ave., then south through Beverly Hills and Morgan Park to 119th St. and Western Ave. Suburbs to be supplied are: Alsip, Evergreen Park, Hometown, Oak Lawn, Bedford Park, Bridgeview, Summit, Stickney, the Central and South Stickney Sanitary Districts, and Forest View.

Western — This 320 rated million gallon per day capacity station was completed in 1927 and is equipped with four steam turbine-driven centrifugal pumps. Its facilities include a 30 million gallon reservoir used primarily during summer weather to reduce peak demands on the South District Filtration Plant. The station

serves metropolitan area residents living in approximately a 47 square mile area of Chicago and also serves the four suburbs of Bedford Park, Forest View, Stickney, and Summit. Those supplied within the City Limits live within an area roughly bounded by Pershing Rd. and the City Limits on the north; then east to Pershing Rd. and Indiana Ave.; then on a southwesterly diagonal from that point to 63rd St. and Ashland Ave.; thence on a southeasterly diagonal from that point to 79th and Halsted Sts.; then due west to 79th St. and the City Limits.

Roseland — This station has five steam turbine-driven centrifugal pumps having a total rated capacity of 305 million gallons per day. Built in 1911, it serves metropolitan residents living in about a 116 square mile area of Chicago and 23 suburbs. It serves the entire South Side south of a line extending roughly from Cicero Ave. east along 79th St. to Stewart Ave.; thence southeasterly to 95th St. and Torrence Ave., south to 117th St., and east to Indiana State Line. Suburbs served are: Alsip, Blue Island, Bridgeview, Burnham, Calumet City, Calumet Park, Dixmoor, Dolton, East Hazelcrest, Evergreen Park, Harvey, Hazelcrest, Hometown, Markham, Merrionette Park, Midlothian, Oak Lawn, Phoenix, Posen, Riverdale, Robbins, South Holland, and the South Stickney Sanitary District.

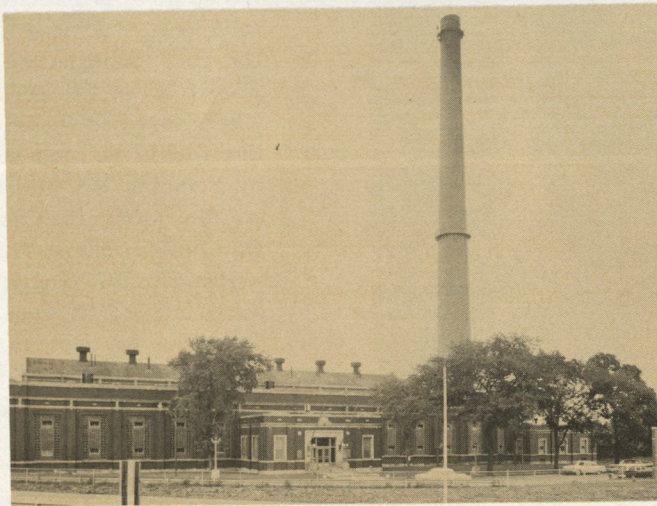
68th Street



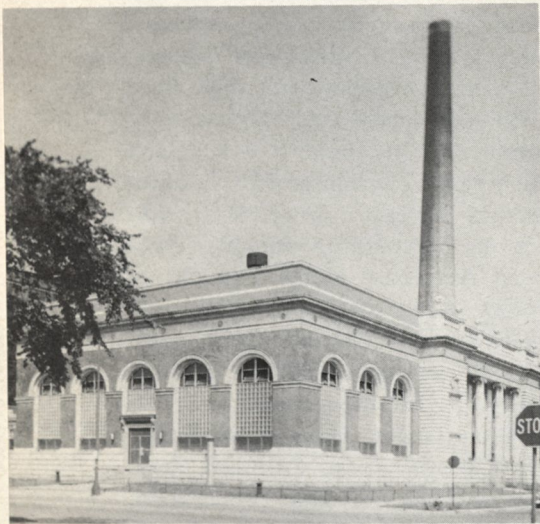
Chicago Avenue — This historical station was placed in service in 1854 as a steam station and now has five modern electric motor-driven centrifugal pumps, the total rated capacity of which is 260 million gallons per day. The present building is one of the few structures to survive the Fire of 1871, which interrupted its service for eight days. It supplies persons living in about a 6 square mile area roughly from Madison St. to North Ave. between Ashland Ave. and the Lake, including the north half of Chicago's Loop area.

Sixty-Eighth Street — Placed in operation in 1889, this electric station today has six modern motor-driven centrifugal pumps having a total rated capacity of 290 million gallons per day. It serves City residents living in about a 27 square mile area bounded roughly by Pershing Rd. on the north, Halsted St. on the west, 95th St. on the south from Halsted St. to Torrence Ave., then south along Torrence Ave. to 116th St. and east along 116 St. to the County line.

Mayfair — Placed in service in 1918, Mayfair pumping station is equipped with six steam turbine-driven centrifugal pumps having a total rated capacity of 400 million gallons per day. It serves residents living in about a 70 square mile area in Chicago northwest of a line drawn from North and Narragansett Aves. to Devon Ave. and Pulaski Rd. and O'Hare International Airport, as well as the suburbs of Elmwood Park, Franklin Park, Golf, Harwood Heights, Lincolnwood, Morton Grove, Niles, Norridge, Park Ridge, River Grove, Rosemont, and Schiller Park.



Mayfair



Central Park

Central Park — This station is a steam-powered 360 million gallon per day capacity plant placed in service in 1900, having five modern turbine-driven centrifugal pumps. It supplies residents in an area of about 44 square miles in Chicago and the suburbs of Berwyn, Broadview, Brookfield, Cicero, Forest Park, LaGrange Park, Lyons, North Riverside, Riverside, McCook, and Westchester. In Chicago, the station's service area is bounded approximately by Pershing Rd. (39th St.) on the south, Western Ave. on the east, Kinzie St. on the north, City Limits on the west.

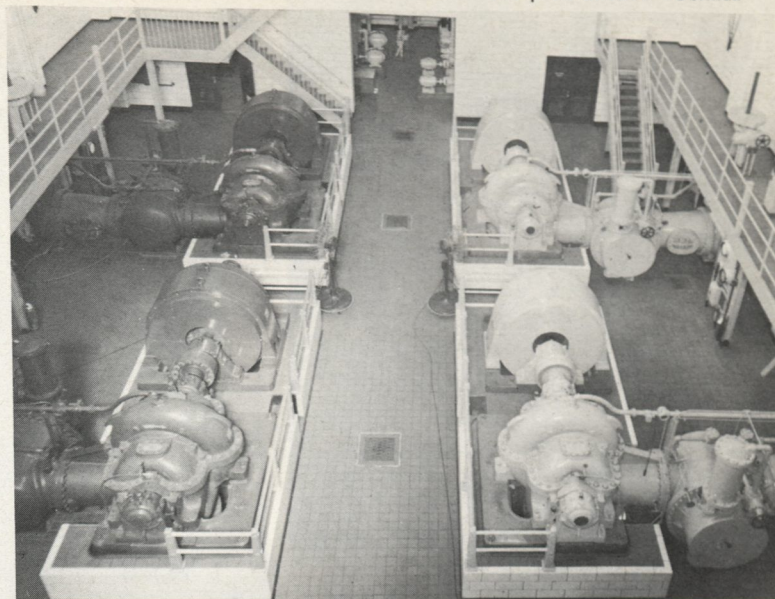


Thomas Jefferson

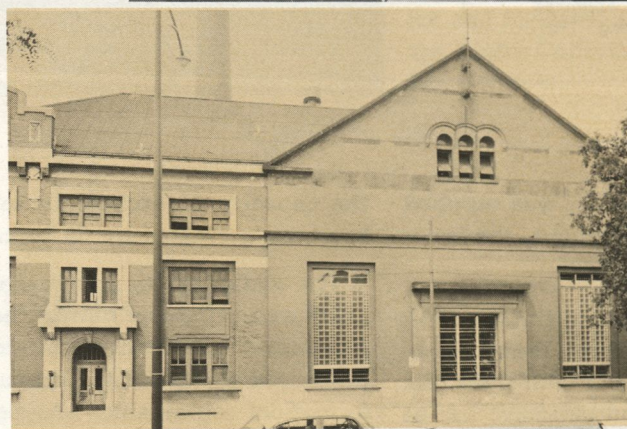
Thomas Jefferson—This four-pump electric station placed in service in 1928 has a rated capacity of 160 million gallons per day. It serves residents in approximately a 17 square mile area roughly from Belmont Ave. on the south to the City Limits on the north, and from Pulaski Rd. on the west to the Lake on the east, north of Lawrence Ave. and from Pulaski Rd. to Ashland Ave. south of Lawrence Ave.

Cermak — This electric station, opened in 1936, is equipped with six 50 million gallon per day motor-driven pumps having a rated capacity of 300 million gallons per day. It supplies residents in about a 9 square mile area roughly bounded by Western Ave. to the Lake and from about 33rd St. on the south to Madison St. on the north, including the south half of the downtown section of Chicago's Loop area.

Springfield—This 360 million gallons per day rated capacity station was built in 1901, has five steam turbine-driven centrifugal pumps, and serves metropolitan area residents in about a 41 square mile area. In the City, it serves residents living within an area bounded roughly as follows: A diagonal line from North and Narragansett Aves. to Irving Park Rd. and Cicero Ave.; then southeasterly from that point to North and Ashland Aves.; then south to Madison St., then west along Madison St. to Narragansett and the City Limits at Oak Park Ave. It also serves nine suburbs: Berkeley, Hillside, Maywood, Melrose Park, Northlake, Oak Park, River Forest, Stone Park, and Leyden Township.

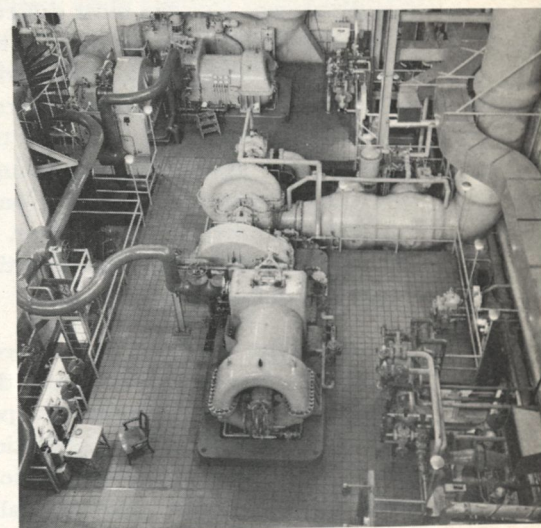


Pump installation—Cermak



Lakeview

Lake View — Completed in 1889, this station is equipped with four 25 million gallons per day triple expansion type steam pumping engines having a total rated capacity of 100 million gallons per day. It is the last station now operating reciprocating pumps of small capacity. All other City stations have replaced this type of equipment with modern motor or steam turbine-driven centrifugal pumps. It supplies water to residents in about an 8 square-mile area bounded approximately by Ashland Ave. on the west, Lawrence Ave. on the north, North Ave. on the South, and Lake Michigan on the east.

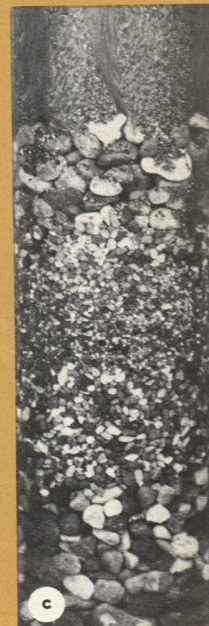
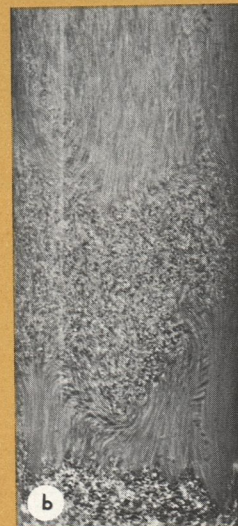


Pump installation—Springfield

CHICAGO EMPHASIZES WATER QUALITY



Chemist checking apparatus for extracting organic material from lake water. The Department's laboratories examined 234,559 various samples during 1961.



(a) Cross section of Chicago standard filter. (b) Sand and gravel movement during high rate of backwash in standard filter ($1/2$ second exposure). (c) Backwash in inverted gravel filter now under experimental test.

Water of high quality was supplied to consumers throughout the year 1961.

Progress was made in the handling and feeding of lime in slurry form at the South District Plant. Lime, the last dry chemical in extensive use at this plant, was also the most difficult to handle in this form. Dry hydrated lime was purchased and mixed with water on unloading to form a slurry. It was stored and later added to the water in the slurry form. Although this system was in service for only the last five months of the year, it fed 40.4 percent of the plant's entire usage of lime for the year.

Modification of the chlorine feeding system, begun in 1960 with the installation of one chlorine evaporator, continued with the installation of two more such units. In addition, three of the original chlorine scales were modified to supply liquid chlorine to the evaporators. This modification permitted rebuilding each scale in such a manner that it now supports three one-ton cylinders. In this way,

the capacity of each of these scales has been increased by 50 percent.

The radioactivity monitoring program was expanded during the year. A gamma scintillation counter was purchased to extend the range of information obtainable. A separate room was equipped for the scintillation counter and proportional counters, with controlled temperature and humidity to increase the reliability of their operation.

The filtration plant purified a total of 127,603,500,000 gallons of water during the year. On the maximum day, June 30, 1961, it processed 496,500,000 gallons and purified water at a rate of 606,000,000 gallons per day during the maximum hour, which occurred at 8:00 p.m. on August 30, 1961.

The Water Safety Control Section made quality inspections of the water by daily sampling at numerous points in the distribution system and the water pumping stations. The work included the continuous control of simple chlorination treatment and

fluoridation in the North and Central Districts and at two Control Stations which monitor the Wilson Avenue and Dever Crib supplies. In addition, the section staff kept the Lake Michigan primary water supply in the vicinity of Chicago under close surveillance.

During the year 51,864 water samples were collected for water quality inspection throughout the Chicago water system. The results of bacteriological and chemical analysis of these samples indicate that the quality of the water furnished the consumer was much above the average minimum bacterial standards set forth by the United States Public Health Service.

The Section supervised 177 water main sterilizations consisting of 174,947 feet of mains and 50 reesterilizations of 49,699 feet of new water mains up to 54 inches in diameter.

Dredging Inspectors controlled dredging and dumping operations on Lake Michigan and in Chicago's waterways.

154,086 WATER METERS IN SERVICE

The Water Meter Division is responsible for testing, repairing, controlling, and keeping detailed records on all water meters in service. It also maintains detailed stock records of all meters and repair parts carried in inventory.

During 1961, 4,548 meters, ranging in size from $\frac{5}{8}$ ths of an inch to 12 inches, were installed, bringing the total number of meters in service in the water works system to 154,086 at the end of the year. Of this total, 142,674 were meters ranging in size

from $\frac{5}{8}$ ths of an inch to $1\frac{1}{2}$ inches, inclusive, and 11,412 were meters ranging in size from 2 inches to 12 inches, inclusive.

The activities of the Water Meter Division are divided into two major segments—field operations and shop operations. A total of 31,314 maintenance and repair jobs were completed in the field during the year, including 5,359 meter replacement jobs. In the shop, 20,499 meters were tested, and 16,767 meters and 35,444 meter parts were repaired. In addition, 4,263 new meters were tested at the vendors' manufacturing plants before shipment to this Division, to determine compliance with specifications.

The Water Meter Division inspects and controls each meter after it is installed and before it is placed in service and forwards a complete report to the Water Collection Division for billing purposes.

Water meters being tested for accuracy at the Meter Shop. 24,762 meters were tested in 1961.



500,798 ACCOUNTS SERVICED

During 1961, the Water Collection Division serviced 500,798 accounts of which 154,086 were metered rate accounts and 346,712 were assessed rate accounts.

Of the \$49,275,478 of income to the water fund in 1961, the Collection Division collected \$48,769,831.45. The difference in these two totals is represented by water fund property rentals, payments for the steam furnished to other buildings by pumping stations, and other miscellaneous income which was not specifically collected by the Division. Included in the total monies collected by the Collection Division was \$11,000,203.76, collected for water charges from assessed rate accounts, and \$36,932,985.63 collected for water charges from metered rate accounts. The Division also collected \$77,205 from sewer service rental accounts.

The increase in the amount collected for water charges in 1961, as compared to 1960, is attributable primarily to the $37\frac{1}{2}$ percent increase in the water rates authorized by the City Council and put into effect on May 1, 1961. Including this most recent increase, the present metered rate for water in Chicago is 22 cents net per 1,000 gallons. This rate is still among the lowest rates charged by the major cities of the United States.

The field forces of the Water Collection Division made 1,277,882 visits and a corresponding number of reports during the year. Members of the field forces read 1,102,692 meters and made 121,100 assessment examinations.

The water rate takers of the Division also made 47,278 visits to serve shut-off notices to enforce payment of water charges and to turn on water

for consumers, in accordance with the provisions of the Municipal Code. These visits resulted in the collection of \$364,168.51 or an average of \$30,-347.37 per month during the year.

SAFETY AWARDS

The continued intensive promotion of safe work practices in all field and plant activities of the Department during the year made possible a noteworthy safety record again during 1961.

For the safety record posted, the Department won the following safety awards for the year:

NATIONAL SAFETY COUNCIL

AWARD OF MERIT

Department of Water and Sewers

AWARD OF MERIT

(Water Utilities Section)
Bureau of Water

AMERICAN WATER WORKS ASSOCIATION

AWARD OF HONOR

Bureau of Water

DISTRIBUTION SYSTEM EXPANDED

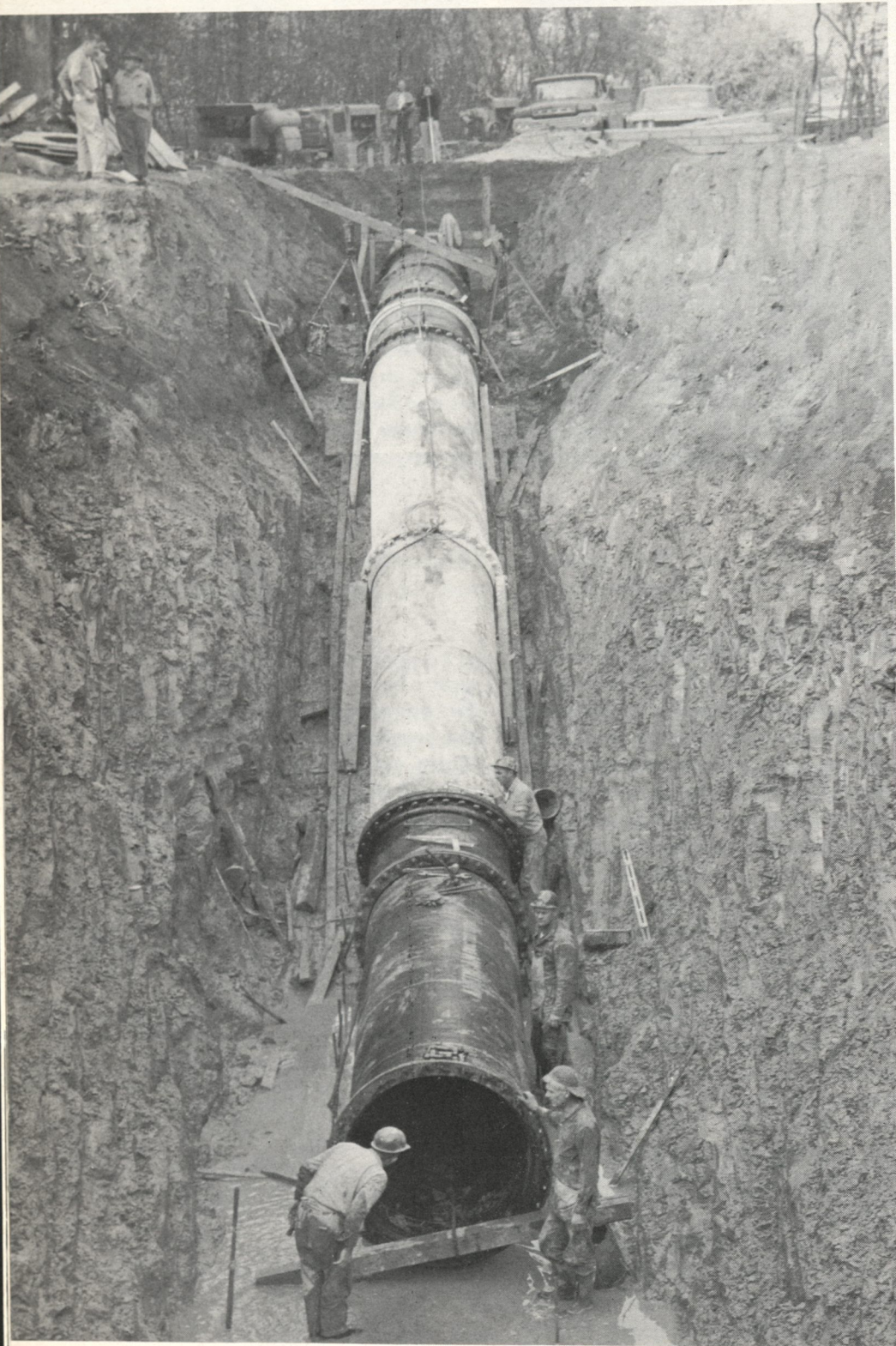
The year 1961 was one of significant accomplishment for the Water Distribution Division. Its construction crews built over 42 miles of additional new water mains in the City's 4,028-mile distribution system.

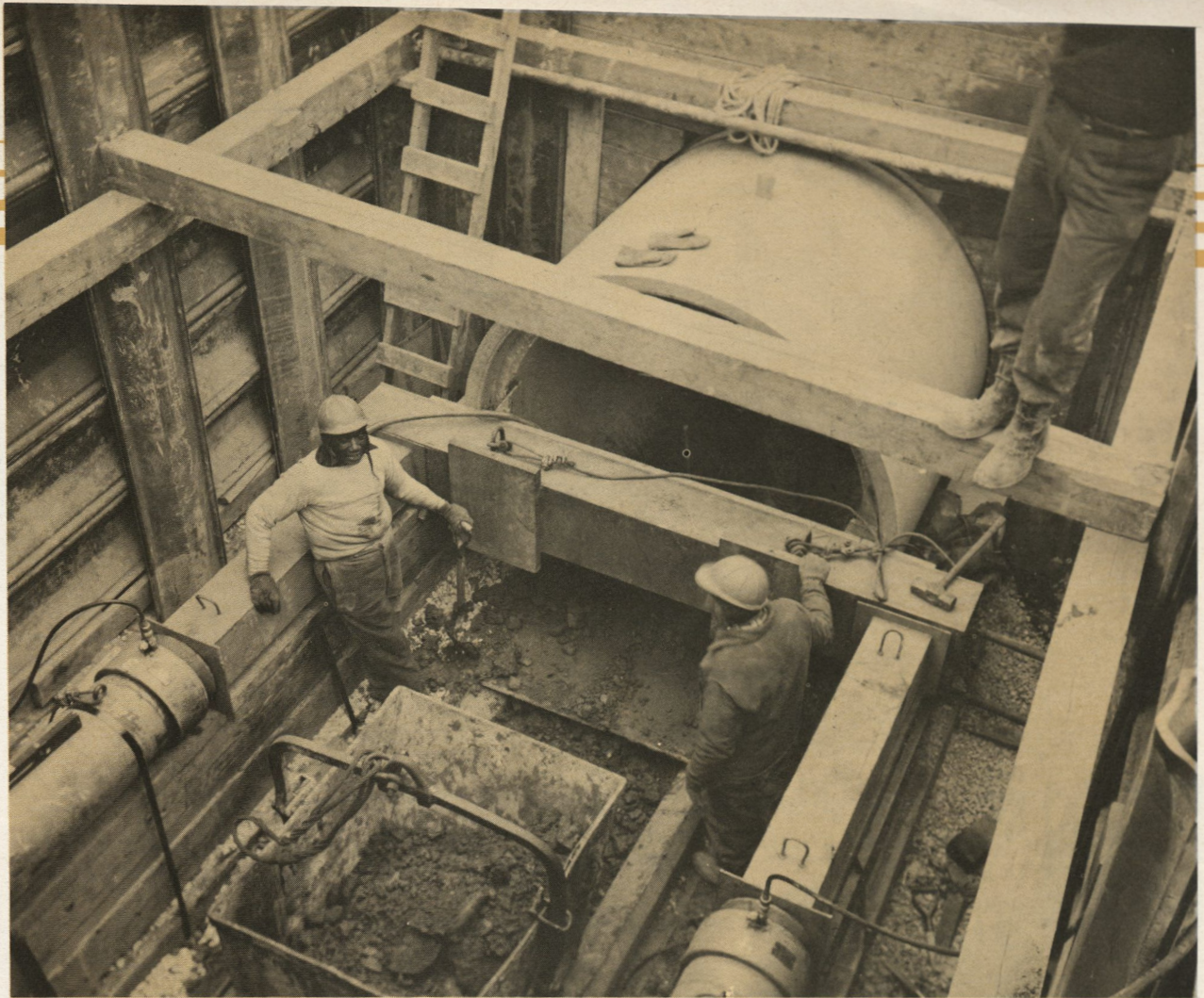
Of this total, 93,700 feet of mains had a diameter of 16 inches or more.

Work went forward in all sectors of Chicago to improve service for tens of thousands of users, boost water pressures, and increase the reliability and capability of the distribution system.

This program reflects the steady growth of the city's water main network since the creation in 1953 of the Department of Water and Sewers. Since then, the amount of pipe in service has grown steadily with the passage of each year. During the nine-year period, 1953 to 1961 inclusive, a little over 295 miles of water mains of various sizes have been constructed and put into service in the distribution system. During the same period, however, approximately 150 miles of water mains were removed or abandoned.

Constructing 48 inch ductile iron water main under the bed of the Desplaines River.





Jacking culvert pipe under Soo Railroad at Bryn Mawr Avenue to carry 48 inch water main to O'Hare International Airport.

Major mains constructed in 1961 included—

- ▶14,000 feet of 30- and 48-inch pipe in Eggleston Ave. from 104th to 106th Sts., thence west in 106th St. to Parnell Ave., thence south to 123rd St.
- ▶1,800 feet of 48-inch pipe in Otawara Ave. between Bryn Mawr and Rosedale Aves.
- ▶9,000 feet of 16- and 36-inch pipe along the South Route Expressway site from 27th to 32nd Sts., thence west in 32nd St. to Wells St., thence south to 33rd and Wells Sts.
- ▶12,000 feet of 48-inch pipe in Bryn Mawr Ave. from Canfield Ave. to Chicago O'Hare International Airport.
- ▶6,600 feet of 48-inch pipe in Cicero Ave. between 55th and 65th Sts.
- ▶12,500 feet of 48-inch pipe from the Northwest Expressway and Laverne Ave. to Winnemac Ave., thence west in Winnemac Ave. to Leclaire Ave., thence north to Elston Ave., northwest in Elston Ave. to Catalpa St., thence west to Milwaukee Ave., northwest to Bryn Mawr Ave. and west in Bryn Mawr to the Northwest Expressway.
- ▶9,500 feet of 60-inch pipe in Cicero Ave. between 65th and 67th Sts. and 71st and 83rd Sts.

The 12,000-foot 48-inch main built to supply Chicago O'Hare International Airport, will provide sufficient

water to meet the needs of this great jet age facility. Over 21,000 feet of feeder main was constructed along the Northwest Expressway and the route of the new South Expressway. These mains demonstrate the ability of the distribution system to keep pace with the demands of Chicago's superhighway construction.

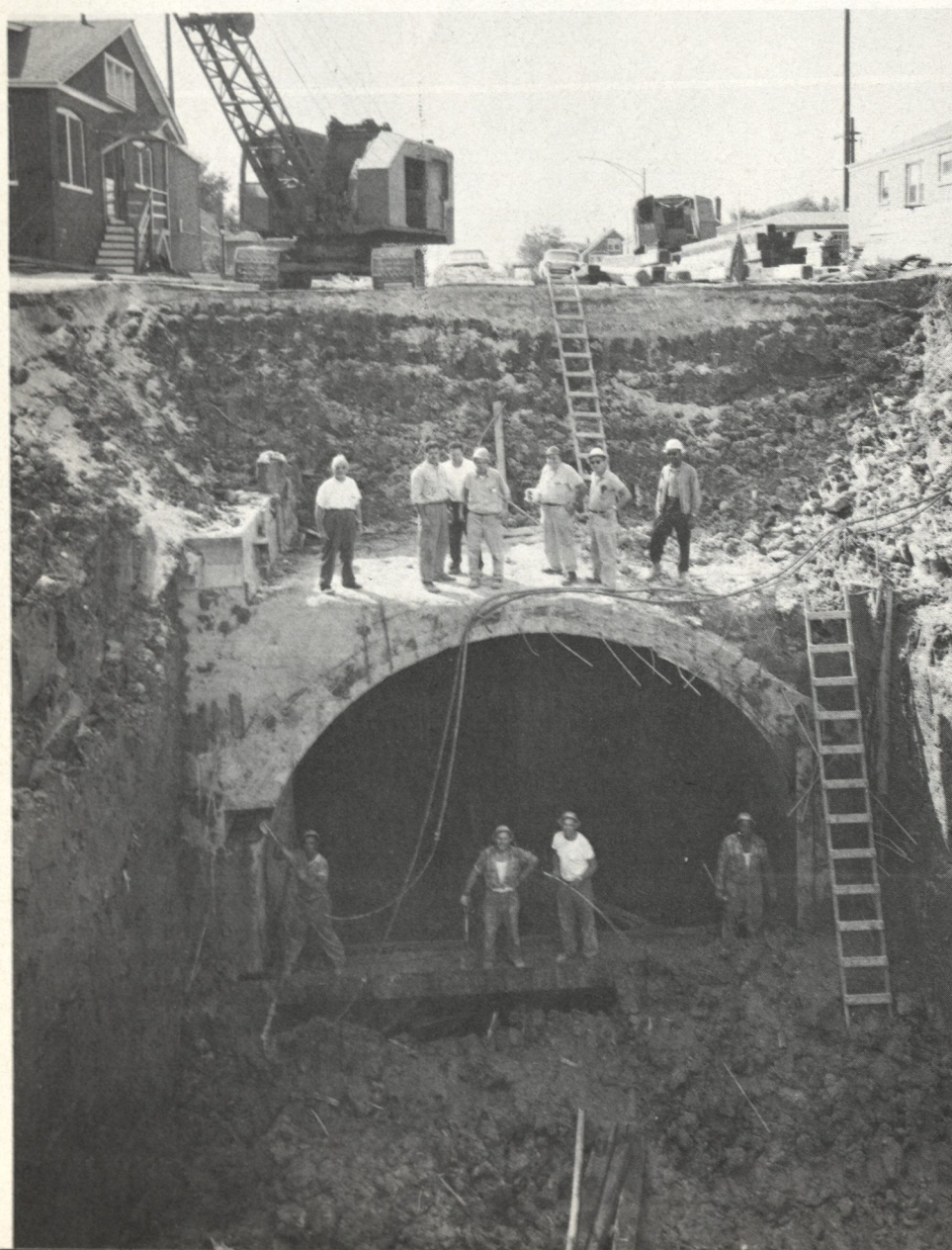
In other activities, engineers of the Water Distribution Division continued their efforts to reduce underground leakage and an estimated 14 million gallons of water were saved each day through this method.

During 1961 plumbing inspectors made 2,993 first inspections; 3,296 reinspections; 2,023 wrecked building inspections; 29,953 building permit and service pipe inspections; 2,483 meter inspections; 8,004 water contamination prevention inspections; and 17,527 fixture inspections.

78 MILES OF SEWERS ADDED TO THE SYSTEM



Inspection of a 21 foot sewer
before placing it in service.



In 1961, 78 miles of new sewers ranging in size up to 19 feet, 2,306 catch basins, and 2,715 manholes were added to the public sewer system, bringing the total length of sewers in Chicago to 3,839 miles.

Of the total miles of sewers added to the system, 24 miles were over 27 inches in diameter and 54 miles were 27 inch and smaller in diameter. In the total miles of sewers constructed during the year, there were $7\frac{1}{2}$ miles by private contractors under the sewer bond program, 5 miles by private contractors in public streets, 12 miles by the Board of Local Improvements on paving contracts, 12 miles by the

Large sewer under
construction at 58th Street
and Kenneth Avenue.

Cleaning a catch basin with an "orange peel" machine.



State Division of Highways in connection with highway construction, 10 miles by the Cook County Highway Department in connection with highway and expressway construction, and 27 miles at O'Hare International Airport by the Department of Public Works. One and one-half miles of sewers were constructed during the year by Bureau of Sewers work forces, two miles were added to the system through annexation, and one mile was built in connection with other miscellaneous construction.

During recent years, radical changes in land-use patterns throughout Chicago have made mandatory continuous additions to and revisions of the drainage system, in order to reduce basement and underpass flooding in various sections of the City. The increase in the number of buildings with large roof areas, roadways, highways, parking areas, and other surface construction has greatly increased the amount of impervious surface area in the City thus, preventing precipitation from reaching the soil for retention as in past years. This, in turn, has increased the intensity of storm run-off

which has particularly taxed those sewers built in the earlier years.

In the last five years, considerable gains have been made in reducing the basement and underpass flooding in Chicago. This year-by-year improvement has been due to the following two basic factors:

- 1) The construction program accomplished each year to increase sewer capacity, and
- 2) The stepped-up maintenance program, both in repair and cleaning operations, to keep the sewer system operating at the maximum capacity available.

In the five-year period of 1957-1961, inclusive, some 282 miles of new sewers were constructed and added to the system.

The repair division of the Bureau completed 20,471 repair jobs during the year, 748 of which were repairs of main sewer breaks, 13,698 were catch basin repairs, 5,696 were manhole repairs, and 329 were gutter-grate and basin outlet repairs.

The cleaning division of the Bureau scraped some 6,000,000 feet of sewers

and cleaned a few less than 450,000 catch basins. In these cleaning operations, approximately 157,000 cubic yards of dirt were removed from the system.

The program instituted several years ago to convert the cleaning operations from hand to machine was continued during the year by the addition of six orange-peel catch basin cleaners. This mechanization program is now beginning to show beneficial results in the form of higher and better quality work load accomplishment.

At the end of 1961, there were approximately one-half million house drain connections to the public sewer system in Chicago. Bureau work forces made some 212,000 house drain and sewer pipe inspections and handled 18,300 complaints.

In the street grade, bench monument, and ordinary bench activities of the Bureau during 1961, 247 street grades were established and approved by the City Council and 57 standard bench monuments and ordinary benches were established.

DEPARTMENT OF WATER AND SEWERS

JAMES W. JARDINE.....Commissioner of Water and Sewers

BUREAU OF WATER

Raymond D. Johnsos.....Deputy Commissioner for Water
W. W. DeBerard.....Chief Water Engineer
H. H. Gerstein.....Assistant Chief Water Engineer

PUMPING

J. L. Weeks.....Engineer of Water Pumping

PURIFICATION

J. R. Baylis.....Engineer of Water Purification

DISTRIBUTION

J. T. Garrity.....General Superintendent
T. F. Foley.....Assistant General Superintendent
E. Edelstein.....Chief Engineer

METERING

M. I. Sheridan.....Superintendent

COLLECTION

Joseph J. Ellicott (deceased 6/23/'61).....Superintendent
Edward A. Nihill (appointed 7/10/'61).....Superintendent

BUREAU OF SEWERS

Thomas D. Garry.....Deputy Commissioner for Sewers
Arthur E. Cook.....Administrative Assistant
A. J. Schafmayer.....Chief Engineer

INSPECTION

Harry M. Forrey.....Assistant Chief Engineer

DISTRICT REPAIR

Joseph Rostenkowski.....Superintendent

DISTRICT CLEANING

John Kilroe.....Superintendent

CONSTRUCTION

Ralph McNamara.....Superintendent
Vincent Shannon.....Superintendent

ENGINEERING

Tenney S. Ford.....Engineer
Charles E. Benson.....Engineer
David Goldberg.....Engineer
Edward W. Hallauer.....Engineer

ARTERIAL REPAIR AND CLEANING

Edward Gill.....Superintendent

ADMINISTRATION AND FUNCTIONS

The Department of Water and Sewers is divided into two major units—the Bureau of Water and the Bureau of Sewers.

The Bureau of Water provides water to all of Chicago and 59 suburbs, and bills and collects water charges for this service. The Bureau is composed of a Pumping Station Operation Division which operates 4 water intake cribs and 10 pumping stations to pump the water into the system; the Water Purification Division, which operates the water filtration plant and supervises treatment of the water to insure its safety and palatability; the Water Distribution Division, which plans, constructs and maintains the distribution system to transport the water from the pumping stations to the user's faucet; the Meter Division, which operates the water meter repair shop and maintains and checks the accuracy

of the meters that measure the amount of water used by the consumers, and the Collection Division, which reads the meters, bills, collects and accounts for water charges.

The Bureau of Sewers operates and maintains Chicago's vast public sewer system. The Bureau is composed of an Engineering Division that plans and designs sewer repairs and extensions; a Cleaning Division that flushes and scrapes sewers and cleans catch basins on a district basis; a Repair Division that makes repairs to the sewer system on a district basis; a Motor Fuel Tax Division, that does both repair and cleaning work on arterial highway sewers, and an Inspection Division that supervises sewer construction and installation of connections.

1961 MAJOR SEWER STATISTICS

Existing Sewer System:
Miles of Sewers.....3,838.70
Catch Basins.....202,383
Manholes.....139,510

1961 New Sewer Construction:
Miles of Sewers—all sizes.....78.0
Catch Basins.....2,306
Manholes.....2,715

Of the above, 1.5 miles of various sizes of sewers, 22 catch basins and 71 manholes were constructed by Bureau of Sewers work forces.

Inspections.....211,768
Complaints Handled.....18,303

Repairs:
Total Number of Sewer System Repair Jobs Completed.....20,471
Main Sewer Breaks.....748
Catch Basins.....13,698
Manholes.....5,696
Gutter Grates and Basin Outlets.....329

Cleaning:
Dirt Removed in Cleaning Operations—Cubic Yards.....157,304
Sewers Scraped—Feet.....6,126,050
Catch Basins Cleaned.....449,973

Street Grades Established and Approved by City Council.....247

Standard Bench Monuments and Ordinary Benches Established.....57

Receipts:
House Drain Permit Fees.....\$ 143,845
Other Permit Fees.....30,945
Special Deposits.....72,768
Out-of-town Sewer Connection Fees.....77,206
Drain Layers' License Fees.....29,000

Total Receipts.....\$ 353,764

1961 MAJOR WATER STATISTICS

Population and Area Served

(Based on reliable estimates)

Population supplied:

Chicago (1960 U.S. Census 3,550,404)	3,532,000
Suburban (Year-end census as revised)	902,000
Total	4,434,000

Area served (in square miles):

Chicago	225
Fifty-nine suburbs	163
Total	388

Per Capita Consumption

	Gallons Per Day
Chicago	255
Suburban	136
Average	230

Chemical and Physical

Qualities of Water

Total hardness (as parts per million Calcium Carbonate)	132
Water temperatures: Intake (Dever Crib)	
Average	47.2°F.
Maximum	70.0°F.
Minimum	32.0°F.

Pumpage

	Gallons
Annual	
Chicago	327,527,000,000
Suburban communities and industries (metered)	44,646,000,000
Total*	372,173,000,000

*(Amount through

Western Ave. Reservoir ... 1,312,000,000)

Annual Metered Consumption

in Chicago (45.0%† of Chicago pumpage).....147,939,000,000

†(Percentage of Revenue

from Metered rates 77.05%)

Daily

Total daily average	1,019,652,000
Maximum day, June 30	1,425,400,000
Maximum hour (rate) Aug. 31, 3 P.M.	1,798,000,000
Daily Average — Chicago	897,334,000
Daily Average — Suburban	122,318,000

Purity Control

Laboratory samples examined:

Bacteriological Laboratory	43,941
Chemical Laboratory	176,763
Microscopically for plankton	7,263
Electron Microscope	6,592
Total samples examined	234,559

Bacteriological Results

Annual average coliform organisms per 100 ml*

	South District (filtered)	North & Central District (chlorinated only)
Raw	57.93	14.69
Plant outlet	0.01	—
Pumping stations	0.01	0.13
Distribution system	0.01	0.07

*(U. S. Public Health Service Standard for safe drinking water permits a maximum average of 1.0 coliform organisms per 100 ml.)

Purification Treatment

	Gallons
Complete Filtration Treatment	127,603,500,000
Chlorination Treatment only	245,800,730,000

Chemicals Applied — Tons

	Filtration Treatment	Chlorination Only
Chlorine	1,231	1,379
Aluminum Sulfate (as Al)	407	—
Activated Carbon	1,316	—
Lime	2,092	—
Ferrous Sulfate (as Fe)	734	—
Anhydrous Ammonia	117	—
Sodium Silicate	12	—
Hydrofluosilicic Acid (23%)	2,416	4,570
(As Fluorine)	440	852

Supply

Crib intakes in service	4
Emergency shore intake	1
Miles of water supply tunnels under lake and land (6 to 16 feet in diameter)	67.9

Pumping

Pumping stations	10
Pumps available for service	51
Installed pumping capacity (Million gallons per day)	2,855

Annual Pumpage

	Million Gallons
By electrically driven pumps	133,783
By steam driven pumps	238,390
Total annual pumpage	372,173
Coal used by steam powered pumps (tons)	142,996
Electric power used by electrically powered pumps. (kilowatt hrs.)	66,172,020

Distribution

Water Mains: (in miles)	
In use—December 31, 1961	4,027.49
Extended	42.44
Abandoned	25.93
Net addition to system	16.51
Diameter of pipe (inches)	4 to 60

Fire Hydrants:

In use—December 31, 1961	45,019
Installed	891
Abandoned	740
Net Increase	151

Gate Valves:

In use—December 31, 1961	40,918
Installed	770
Abandoned	375
Net Increase	395

Pressure range in mains (lb. per square inch).....25-55

Average pressure at curb (lb. per square inch).....40

Miles of pipe tested for underground leakage.....93.11

Underground main leakage stopped 1961

gallons per day	14,600,000
Premises inspected—house to house leakage survey	32,731
Repaired main breaks—4 inch to 48 inch in diameter	210

Note: All figures adjusted to conform to inventory made during 1960-61.

Meters:

In service—December 31, 1961	154,086
Installed by master plumbers	1,669
Installed by Water Distribution Division	2,879
Total	4,548
Removed	2,298
Net increase	2,250
Repaired on premises	17,897
Repaired in shops	16,767
Tested	24,762
Non-metered (assessed rate) services	346,712
Total Services (assessed & metered)	500,798

Supplements covering complete 1961 water or sewer statistics are available upon request.

REVENUE AND EXPENDITURES

REVENUES

Water bills paid	\$48,079,561
Fees for new service outlets	60,804
Sale of steam	195,016
Interest received from deposits and investments	410,387
Rents and miscellaneous	529,710
Total Revenue	<u>\$49,275,478</u>

EXPENDITURES FOR OPERATION AND DEBT SERVICE

Total revenue	\$49,275,478
Cost of operations	\$22,571,895
Repair and maintenance	9,082,969
Judgements	9,289
Redemption of certificates	5,460,000
Interest on certificates and judgements	5,612,625
Refunds on assessments	21,880
Total	<u>\$42,758,658</u>
Balance available	\$ 6,516,820
Balance from prior years to January 1, 1961	20,309,733
Plus: Collection of accounts receivable previously written off	6,067
Adjustment of prior years' expense	1,719
Sub-total	<u>\$26,834,339</u>
Less: Accounts receivable written off	\$ 80,493
Increase in reserve set up for Water Pipe Extension Certificates	44,822
	<u>\$ 125,315</u>
December 31, 1961 balance available	<u>\$26,709,024</u>

WATER WORKS CERTIFICATES OF INDEBTEDNESS

Balance 1/1/61	\$10,245,445*
Add: Sales of certificates	30,000,000
Miscellaneous income	12,577
	<u>\$19,767,132</u>
Construction and improvements	19,850,454
Balance 12/31/61	<u>\$ 83,322*</u>

*Deficit—Borrowed from the Revenue Fund—to be repaid from funds realized from the sale of Water Works Certificates of Indebtedness to be sold during 1962.

OTHER CASH ACCOUNT

Cash restricted for redemption of Water Pipe Extension Certificates	\$ 297,996
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1961 EXPENDITURES FOR WATER WORKS CAPITAL IMPROVEMENTS

Water Works Construction	Source of Funds Water Certificates
Water mains	\$ 7,808,933
Filtration (Central)	7,213,518
Tunnel—Columbus Avenue	1,614,618
Pumping stations and miscellaneous	3,213,385
	<u>\$19,850,454</u>

The above tabulations represent a preliminary financial summary of the Water Fund. Final financial statements will be included in the City Comptroller's report for 1961.

INVEST 20 MILLION DOLLARS IN WATER WORKS IMPROVEMENTS IN 1961

During 1961, a total of nearly \$20 million was invested in the improvement of plants and facilities of the Chicago water works system. This included \$8,290,000 for new water mains, \$3,906,000 for pumping stations and tunnels, and \$7,519,000 to increase filtration plant capacities. In co-operation with the Departments of Public Works and City Planning, the Department of Water and Sewers each year develops a water works capital improvement construction program for the coming five years.

For the five-year period 1962-1966, this program calls for the expenditure of \$85,400,000.

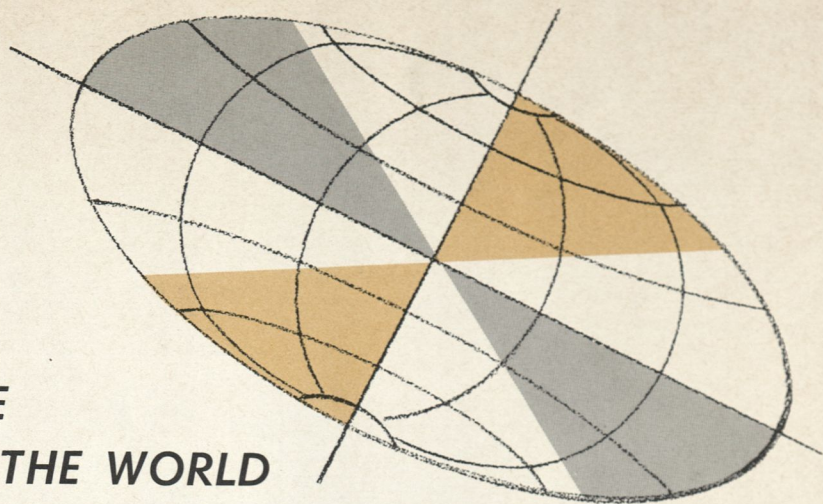
Included in the total expenditures of \$85,400,000 are \$4,775,000 for water tunnels; \$37,200,000 for filtration plants; \$7,027,000 for pumping stations; and \$36,398,000 for water mains. Major specific outlays include \$30,400,000 to complete the great Central District Filtration Plant, \$6,800,000 to expand by 50 percent the capacity of the South District Filtration Plant; \$1,185,000 to com-

plete the modernization of the May-fair Pumping Station; \$1,370,000 to construct a replacement for the Lake View Pumping Station; \$1,400,000 to complete the Columbus Avenue water tunnel; and \$2,000,000 to link the North Side tunnels, built to serve the new Central District Filtration Plant.

It is expected by the end of 1963 that the filtration, pumping and tunnel capacities of the Chicago water system will be ample to supply the demands that will be placed upon it during the years ahead through 1980.

FIVE-YEAR WATER WORKS CAPITAL IMPROVEMENT PROGRAM 1962-1966 CALLS FOR THE EXPENDITURE OF \$85,400,000

FROM THE ENDS OF THE WORLD



In 1961, the Department of Water and Sewers was honored to have as its guests distinguished scientists, engineers, technicians, administrators and other public servants representing water works of 14 nations and five continents. Nearly 100 such eminent men of science and engineering, many under the auspices of the International Cooperation Administration, visited Chicago's water works and sewer systems to observe operations and inspect plant facilities.

The list of foreign dignitaries who visited here is long and impressive, and space limitations make it impossible to record all their names. Notables included Secretary-General Pham Minh Duong, of the Viet Nam Ministry of Public Works; Mr. H. G. Sweet and R. M. West of the Metropolitan Water, Sewerage and Drainage Board of Sydney, Australia; and Dr. Oswald Machado, Dr. Gert Kaminsky, and Dr. Estanislau Blumberg of Sao Paulo, Brazil.

Others include Mr. Amal K. Poddar, Water Engineer, Calcutta; Mr. T. G. Srimivasam, Public Health Engineer, Madras; Mr. N. V. Modak, Director of the Central Public Health Engineering Research Institute of Nagpur; Mr. T. K. Basu, Assistant Chief Engineer, West Bengal; and Mr. T. G. Sankaran, Public Health Engineer, Madras, all of India.

Also, the Hon. Mr. Hidajat Noto-soegondo, and Hon. Mr. Raden Wahju Purnomo of Djakarta, Indonesia; Mr. N. J. Ruffle, Mr. G. R.

Smail, of Sunderland, England; and Dr. R. F. Packham, Water Research Association of Red Hill Surey, England. The Hon. H. Fujita, Tokyo Metropolitan Waterworks and Sewerage Board, Hon. Mr. S. Ohazaki, Japan; Hon. Mr. Hiroyuki Michimi, Chiba Works, Kawlaski Steel Corporation, Japan, and Hon. Mr. Shoi Ishino, Kurita Industrial Company, Ltd., Japan.

Also, Hon. Tsu-suan Chang, Chief Engineer, Public Works Bureau, Taiwan; Hon. Yung-liang Lin, Commissioner, Department of Reconstruction, Taiwan; Hon. Pen-chang Lo, Ministry of Economic Affairs, Taiwan; Hon. Chao-hsin Hu, Taiwan, and Mo-ta Chen, Taiwan; and Hon. Professor Mchen I. Fan, National Taiwan University.

Also Hon. Diomedes Crisostomo, Queaon City, and Hon. D. M. Con-sunji, Hon. A. P. Fabian, Hon. A. R. Flores, Hon. J. M. Inocencio, Hon. L. Ocampo, Hon. J. A. Sison, Hon. J. L. Soriano, and Hon. E. Z. Villavicencio, and Hon. J. G. Ponce, The Philippines.

Also, Mr. J. A. Picken, Chief Engineer, and Mr. F. P. Hornby, Chief Chemist, Bristol Water Company, England.

And Mr. B. Hawerman, Mr. H. Ekeberg, Mr. A. Romas, Mr. G. Fristedt and Mr. G. Weijman, of Sweden; and other engineers and scientists from Mexico and The German Federal Republic.

ANNUAL
1961
REPORT

DEPARTMENT OF WATER AND SEWERS - CITY OF CHICAGO



UNIVERSITY OF ILLINOIS-URBANA



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